

## C L A I M S

1. An information transmission method comprising:  
on a transmitting side, adding reconstruction information required for reconstructing contents of header  
5 information or part of the header information to  
encoded information and transmitting an added result;  
and on a receiving side, performing an error check with  
respect to the header information or part of the header  
information, and decoding the encoded information by  
10 using the reconstruction information as a substitute  
when an error is detected by the error check.

2. A method according to claim 1, which includes  
adding instruction information indicating addition of  
the reconstruction information to the header informa-  
15 tion.

3. A method according to claim 1 or 2, wherein  
the encoded information contains a picture code stream  
obtained by compress-encoding a picture signal, and  
the reconstruction information contains information  
20 indicating a display timing of each picture frame of  
the picture code stream.

4. A method according to claim 1 or 2, wherein  
the encoded information contains a picture code stream  
obtained by compress-encoding a picture signal, and  
25 the reconstruction information contains information  
indicating a prediction mode of each picture frame of  
the picture code stream.

## 5. An encoding apparatus comprising:

means for segmenting encoded information into not less than two layers, and adding a sync signal and header information required for decoding to each layer;

5 means for transmitting, as reconstruction information for reconstructing the encoded information, information which has already been transmitted from the upper layer or part of the information, information which has already been transmitted within the same  
10 layer or part of the information, or information for reconstructing contents of information which has already been transmitted from the upper layer or within the same layer or contents of part of the information, upon adding the information to the encoded information;  
15 and

means for inserting designation information with a predetermined bit pattern which indicates addition of the reconstruction information in the header information.

## 20 6. An encoding apparatus comprising:

means for adding a sync signal to header information required for encoding, and encoding the information;

25 means for transmitting, as reconstruction information for reconstructing the encoded information, information which has already been transmitted or part of the information or information indicating contents

of the information or contents of part of the information, upon adding the information to the encoded information; and

means for inserting designation information with a  
 5 predetermined bit pattern which indicates addition of the reconstruction information in the header information.

7. An apparatus according to claim 5 ~~or 6~~,  
 wherein information for changing encoding processing of  
 10 a portion associated with the header information from encoding processing before the portion associated with the header information to another type of encoding processing is inserted in the header information, and the information is transmitted.

8. An apparatus according to claim 7, wherein the  
 15 reconstruction information is information for changing the encoding processing or information for reconstructing part of the encoding processing.

9. An apparatus according to claim 5 ~~or 6~~,  
 20 wherein the encoded information contains a picture code stream obtained by compress-encoding a picture signal, and the reconstruction information contains information indicating a display timing of each picture frame of the picture code stream.

25 10. An apparatus according to claim 5 ~~or 6~~, wherein the encoded information contains a picture code stream obtained by compress-encoding a picture signal,

and the reconstruction information contains information indicating a prediction mode of each picture frame of the picture code stream.

11. A decoding apparatus comprising:

5 means for segmenting encoded information into not less than two layers, and adding a sync signal and header information required for decoding to each layer;

means for detecting designation information having a predetermined bit pattern from the header information; and

10 means for decoding the encoded information by using information, transmission of which is indicated by the detected designation information, as a substitute for information which has already been transmitted from the upper layer or part of the information, information which has already been transmitted within the same layer or part of the information, or information for reconstructing contents of information which has already been transmitted from the upper layer or within

15 the same layer or contents of part of the information.

20

12. A decoding apparatus comprising:

means for receiving encoded information which is transmitted after a sync signal and header information required for decoding are added to the encoded

25 information;

means for detecting designation information having a predetermined bit pattern from the header

information; and

means for, when the pattern is detected, decoding the encoded information by using information, transmission of which is indicated by the designation

5 information, as a substitute for information which has already been transmitted or part of the information or information capable of reconstructing contents of the information or contents of part of the information.

13. An apparatus according to claim 11 ~~or 12~~,  
 10 further comprising means for detecting change designation information having a predetermined bit pattern from the header information, and changing decoding processing of a portion associated with the header information from decoding processing of a portion  
 15 before the portion associated with the header information to another type of decoding processing in accordance with the detected information.

14. An apparatus according to claim 11 ~~or 12~~,  
 wherein the encoded information contains a picture code  
 20 stream obtained by compress-encoding a picture signal, and the reconstruction information contains information indicating a prediction mode of each picture frame of the picture code stream.

15. An apparatus according to claim 13, wherein  
 25 the reconstruction information is information for changing the encoding processing or information for reconstructing part of the information.

16. An apparatus according to claim 11 or 12,  
 wherein the encoded information contains a picture code  
 stream obtained by compress-encoding a picture signal,  
 and the reconstruction information contains information  
 5 indicating a display timing of each picture frame of  
 the picture code stream.

17. An apparatus according to claim 16, further  
 comprising:

means for decoding information indicating a  
 10 display timing of a picture frame and transmitted as  
 the reconstruction information; and

means for checking whether decoded display timing  
 information complies with a predetermined rule or a  
 rule indicated by independently transmitted information,  
 15 thereby checking whether a transmission path error is  
 introduced into the timing information.

18. An encoding apparatus comprising:

not less than one picture encoding means for  
 receiving and compress-encoding a picture signal;  
 20 multiplexing means for multiplexing a picture code  
 stream output from each of said picture encoding means  
 and other data information code streams, and outputting  
 a multiplexing code stream containing a multiplexed  
 header and a multiplexed payload;

25 means for inserting header information contained  
 in the picture code stream or part thereof in the  
 multiplexed header; and

means for adding an error correction/detection code generated from information in the multiplexed header to the multiplexed header, providing error protection for the header information in the picture code stream together with another information associated with multiplexing in the multiplexed header by using an error correction/detection code, and transmitting the header information and other information.

19. An apparatus according to claim 18, wherein the header information in the picture code stream, which is contained in the multiplexed header, contains information indicating a display timing of a picture frame in the picture code stream.

20. A decoding apparatus comprising:

demultiplexing means for receiving a multiplexing code stream which is generated by multiplexing a picture code stream and other code streams and contains a multiplexed header and a multiplexed payload, with error correction being provided for header information in the picture code stream or part of the information, together with another information associated with multiplexing in the multiplexed header, by using an error correction/detection code, and demultiplexing the multiplexing code stream into one or a plurality of picture code streams and other data information code streams;

picture decoding means for decoding the

demultiplexed picture code stream; and

means for, when an error is detected in header information in the picture code stream, decoding the picture code stream by using the header information in the picture code stream which is contained in the multiplexed header.

21. An apparatus according to claim 20, wherein the header information in the picture code stream which is contained in the multiplexed header contains information indicating a display timing of a picture frame in the picture code stream.

22. A recording medium on which a code stream is recorded, the code stream having header information and reconstruction information added thereto, the header information being required for decoding, the reconstruction information being used to reconstruct contents of the header information or contents of part of the header information, and the code stream being decoded by using the reconstruction as a substitute for the header information when an error is detected in the header information or part thereof by a decoding apparatus.

23. An encoding/multiplexing apparatus comprising:  
means for segmenting a plurality of types of compressed code strings obtained by compress-encoding an input signal in encoding units;  
means for generating a multiplexed unit code



stream having a length corresponding to an integer multiple of a predetermined length by adding stuffing bits to the segmented compressed code string in segmenting units; and

- 5 means for generating a multiplexing code stream by multiplexing the multiplexed unit code strings.

24. A decoding/demultiplexing apparatus comprising:

- means for receiving a multiplexing code stream and  
10 demultiplexing a multiplexed unit code stream;

means for separating a compressed code string in the multiplexed unit code stream from stuffing bits added thereto;

- means for decoding the separated compressed code  
15 string; and

means for detecting an error in the multiplexing code stream by comparing a position at which decoding of the compressed code string by said decoding means is ended with a start position of the stuffing bits.

- 20 25. An apparatus according to claim 23, wherein the stuffing bits can be uniquely decoded in a reverse direction.

26. An apparatus according to claim 24, wherein said separating means determines a decoding start  
25 position of a compressed code string in the reverse direction by decoding the stuffing bits in the reverse direction, and said decoding means starts decoding in

the reverse direction from the determined start position.

27.. An encoding/multiplexing apparatus comprising:

- compress-encoding means for encoding an input
- 5 signal so as to segment the signal in given encoding units, thereby generating compressed code strings;
- means for generating a multiplexing code stream by collecting sync words having the same degree of importance from the segmented compressed code strings; and
- 10 means for inserting codes indicating delimiters in the encoding units in the multiplexing code stream generated in accordance with the degrees of importance.

28. A decoding/demultiplexing apparatus comprising:

- 15 means for demultiplexing a multiplexing code stream obtained by collecting compressed code strings in accordance with the degrees of importance of code words and multiplexing the compressed code strings;
- means for specifying encoding units corresponding
- 20 to segmented code streams by detecting codes indicating code delimiters in the multiplexing code stream;
- means for generating a compressed code stream by collecting code strings corresponding to identical code delimiters from the multiplexing code stream which is
- 25 multiplexed in accordance with the degrees of importance; and
- means for decoding the compressed code stream.

29. An information transmission method comprising the steps of:

generating an encoded data stream by encoding a video signal; and

5 segmenting the encoded data into a plurality of layers, adding important header information required for decoding to at least some of upper and lower layers, and transmitting the data.

30. A method according to claim 29, further comprising:

10 segmenting the encoded data stream into a plurality of layers, and starting decoding from an upper layer;

performing an error check with respect to decoded data; and

15 extracting important header information from the decoded data, and continuing decoding by using the important header information on a lower layer as a substitute in accordance with an error check result.